

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANDREAS BACHER, KARL-ERNST FICKERT,
THEO MAYER and KURT STARK

Appeal 2007-0618
Application 10/618,936
Technology Center 1700

Decided: February 27, 2007

Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and THOMAS A.
WALTZ, *Administrative Patent Judges*.

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DECISION ON APPEAL

This is a decision on an appeal from the Primary Examiner's final rejection of claims 1 through 15, which are the only claims pending in this application. We have jurisdiction pursuant to 35 U.S.C. § 134.

According to Appellants, the invention is directed to silane-containing polyvinyl alcohols which are hydrolyzed or partially hydrolyzed vinyl ester copolymers having a degree of hydrolysis of 75-100 mol%, where these

products are obtained by a free radical polymerization of at least three specified monomers (Br. 2). Further details of the invention can be gleaned from representative independent claim 1, which is reproduced below:

1. A silane-containing polyvinyl alcohol comprising a completely hydrolyzed or partially hydrolyzed vinyl ester copolymer having a degree of hydrolysis of from 75 to 100 mol%, obtained by free radical polymerization of

a) one or more vinyl esters of straight-chain or branched alkane carboxylic acids having 1 to 18 carbon atoms, of which an amount of from 1 to 30 mol%, based on total polymer, are one or more 1-alkylvinyl esters of C₁₋₆ carboxylic acids, where the 1-alkyl groups are C₁₋₆ alkyl radicals;

b) from 0.01 to 10 mol% of one or more silane-containing, ethylenically unsaturated monomers, and

c) optionally further comonomers copolymerizable therewith, and hydrolysis of the polymers obtained thereby.

The Examiner has relied upon the following references as evidence of obviousness:

Maruyama	US 4,617,239	Oct. 14, 1986
Schilling	US 4,879,336	Nov. 07, 1989

ISSUES ON APPEAL

Claims 1-15 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Schilling in view of Maruyama (Answer 3).¹

¹ We refer to and cite from the "Supplemental Examiner's Answer" dated Jul. 10, 2006.

Appellants contend that Schilling has no discussion of storage stability (Br. 3-4; Reply Br. 2), and the “other monomers” taught by Schilling are very limited (Reply Br. 4).

Appellants further contend that there is no evidence of a motivation to combine the references as proposed by the Examiner, as the problems addressed by the references are very distinct from each other (Br. 6-7; Reply Br. 4).

The Examiner contends that Schilling is “open to the use of another monomer” and, given the benefits of using an ethylenically unsaturated silane-containing monomer in a polyvinyl alcohol binder for paper applications as taught by Maruyama, it would have been obvious to one of ordinary skill in the art to use a silane-containing monomer in the polyvinyl alcohol of Schilling (Answer 4).

Therefore the issue on appeal is: would one of ordinary skill in this art have found it obvious to incorporate the silane-containing monomer taught by Maruyama into the polyvinyl alcohol cobinder composition disclosed by Schilling?

We determine that the Examiner has established a prima facie case of obviousness in view of the reference evidence. Based on the totality of the record, including due consideration of Appellants’ arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of § 103(a). Therefore we AFFIRM the sole rejection on appeal essentially for the reasons stated in the Answer as well as those reasons set forth below.

OPINION

We determine the following factual findings from the record in this appeal:

- (1) claim 1 on appeal requires a completely or partially hydrolyzed vinyl ester copolymer having a 75-100 mol% degree of hydrolysis obtained by free radical polymerization of at least three monomers, including a vinyl ester of C1 to C18 carboxylic acids, a 1-alkylvinyl ester of C1 to C6 carboxylic acids, and a silane-containing, ethylenically unsaturated monomer (see claim 1 on appeal; Reply Br. 4);
- (2) Schilling is directed to an improved cobinder for a coating slip composition, where the cobinder polymer comprises (a) vinyl alcohol units; (b) 1-alkylvinyl alcohol units; (c) optionally vinyl acrylate units; (d) optionally allyl alcohol units; and (e) optionally “other polymerizable monomers” (col. 2, ll. 35-48);
- (3) Schilling teaches a two-stage process, using free radical polymerization followed by hydrolysis (col. 3, ll. 22-44);
- (4) Schilling exemplifies the incorporation of only two types of “other polymerizable monomers,” namely vinyl esters of increased hydrophobia such as vinyl fatty acid esters or ethylene (col. 3, l. 57-col. 4, l. 2);
- (5) Schilling teaches that polyvinyl alcohol cobinders have excellent pigment-binding power and support effect for optical brighteners, but an object of the invention is to overcome the water solubility and “pigment-shock” disadvantages (col. 2, ll. 7-31);

- (6) Maruyama discloses a paper coating agent comprising silicon-containing modified polyvinyl alcohol, and this coating agent becomes viscous and gelled upon contact with paper, forming a water-resistant film on the paper surface improving the surface strength and printability (col. 2, ll. 5-19);
- (7) Maruyama teaches the formation of this coating agent by copolymerizing a vinyl ester and silicon-containing olefinic unsaturated monomer, followed by saponification (hydrolysis) (col. 3, ll. 2-15; *see also* col. 7, ll. 9-14); and
- (8) Maruyama teaches that the silicon atom of the paper coating agent, when applied to paper, greatly improves the surface properties of paper (surface strength, printability, and barrier properties) by reacting with the cellulose fibers and pigments, forming a firm uniform film on the surface of the paper (col. 9, ll. 8-26).

“When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant. [Citation omitted].” *In re Gorman*, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). “Where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable

expectation of success. [Citation omitted].” *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

On the record in this appeal, we find that Schilling discloses an improved cobinder for binding pigments to the paper substrate (col. 1, ll. 54-57, and col. 2, ll. 7-10). We further find that Maruyama discloses a similar binding composition to that of Schilling but with the addition of a silicon-containing monomer (e.g., col. 3, ll. 2-7; col. 7, ll. 9-19). We find that Maruyama teaches that the silicon atom in the silicon-containing modified polyvinyl alcohol is reactive with cellulose fibers of paper *and pigments* to form a firm uniform film on the paper surface (col. 9, ll. 8-26; italics added). We therefore agree with the Examiner (Answer 4) that one of ordinary skill in this art would have incorporated the silicon-containing monomer of Maruyama into the cobinder composition of Schilling for its expected advantages of binding pigments to produce improved surface properties. We also determine that one of ordinary skill in this art would have had a reasonable expectation of success in so incorporating the silicon-containing monomer. We find a reasonable expectation since the two required monomers of Schilling (e.g., vinyl acetate and 1-alkylvinyl acetate at col. 3, ll. 23-26) are similar in structure to the vinyl ester required monomer disclosed by Maruyama (e.g., vinyl acetate at col. 3, ll. 8-9).

For the foregoing reasons, we determine that the Examiner has established a *prima facie* case of obviousness in view of the reference evidence. Appellants assert that the Examples in the Specification show unexpected results (Br. 3; Reply Br. 4-5). Accordingly, we must reconsider all evidence for and against obviousness. *See In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

We agree with the Examiner that the Examples relied upon by Appellants are not commensurate in scope with the claimed subject matter and fail to present a comparison with the closest prior art (Answer 7-8). Appellants only rely on Example 1 from the Specification (Br. 3; *see* Table 3 on page 13 of the Specification). This Example is limited to specific monomer compositions while the claims on appeal are not so limited, including dependent claims 2 and 3 (Reply Br. 5). *See In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). Comparative showings must compare the claimed subject matter with the closest prior art to be effective. *See In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 71 (CCPA 1979). The showing in Table 3 of the Specification only refers to a “[c]ommerical silane-containing polyvinyl alcohol” but fails to identify the specific composition of this alcohol (Answer 8).

For the foregoing reasons and those stated in the Answer, we do not find Appellants’ evidence persuasive of non-obviousness. Therefore we affirm the Examiner’s rejection of claims 1-15 under § 103(a) over Schilling in view of Maruyama.

The decision of the Examiner is affirmed.

Appeal 2007-0618
Application 10/618,936

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2007).

AFFIRMED

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